

DOYNIKOV, Nikolay Mikhaylovich, kand.tekhn.nauk; TURILOV, Grigoriy  
Ivanovich, dotsent: KHOMUTOV, Aron Iosifovich, kand.tekhn.nauk;  
KOSTIKOV, L.Ye., kand.tekhn.nauk, red.; GOLOVKO, B.N., tekhn.red.

[Mechanical engineering; manual for student of physico-mathematical  
departments of pedagogical institutes] Mashinovedenie; uchebnoe  
posobie dlia studentov fiziko-matematicheskikh fakul'tetov pedago-  
gicheskikh institutov. Moskva, Gos.uchebno-pedagog.izd-vo M-va  
prosv.RSFSR, 1959. 395 p. (MIRA 12:12)  
(Mechanical engineering)

PHASE I BOOK EXPLOITATION SOV/5595

Khomutov, Aron Iosifovich, Candidate of Technical Sciences

Legirovannye stali i splavy (Alloyed Steels and Alloys) Moscow, Izd-vo "Znaniye," 1961. 46 p. (Series: Vsesoyuznoye obshchestvo po rasprostraneniyu politicheskikh i nauchnykh znaniy. Seriya IV, 1961. Tekhnika, no. 10) 43,000 copies printed.

Scientific Ed.: G. A. Olesin; Ed.: T. F. Islankina; Tech. Ed.: Ye. V. Savchenko.

PURPOSE : This booklet is intended for general readers and students interested in acquiring a basic knowledge of metallurgy and steelmaking practices.

COVERAGE: The fundamentals of metallurgy are discussed and concise information on ferrous metals, various alloys, and their properties is given. The use of alloyed steels is outlined, and converter, open-hearth, and electric-furnace steelmaking processes are explained. Attention is also given to the vacuum and its application in steel manufacturing. No personalities

Card 1/3

APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000722220012-3

Alloyed Steels and Alloys

SOV/5595

are mentioned. There are 11 references, all Soviet.

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Card 2/3

KHOMUTOV, Aron Iosifovich; AGBYEV, P.Ya., prof., doktor tekhn.nauk, retsenzent; VINITSKIY, S.I., red.isd-va; KLEINMAN, M.R., tekhn.red.

[Complex deoxidation and alloying of steel with silicon-chromium] Kompleksnoe raskislenie i legirovanie stali siliko-khromom. Moskva, Gos.nauchno-tekhn.isd-vo lit-ry po chernoi i tsvetnoi metallurgii. Moskva, Gos.nauchno-tekhn.isd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1961. 90 p.  
(MIRA 14:12)

(Steel alloys--Metallurgy)

YEGOROV, Ye.V.; MOROZOV, Yu.L.; KHOMUTOV, A.I.

Radiation chemical synthesis of new organomineral ion-exchange materials. Izv. AN SSSR. Ser. khim. no.11:2071-2072 '65.  
(MIRA 18:11)

1. Institut khimicheskoy fiziki AN SSSR, Institut elemento-organicheskikh soyedineniy AN SSSR i Vsesoyuznyy nauchno-issledovatel'skiy institut steklyannogo volokna.

L 19884-66 EWT(m)/ETC(f)/EWJ(m)/EWP(j)/T/EWA(h)/EWA(1) DS/RM  
 AGC NR: AP6002103 (A) SOURCE CODE: UR/0062/65/000/011/2071/2072

AUTHORS: Yegorov, Ye. V.; Morozov, Yu. L.; Khomutov, A. I.

ORG: Institute for Chemical Physics, Academy of Sciences, SSSR (Institut khimicheskoy fiziki Akademii nauk SSSR); Institute for Heteroorganic Compounds, Academy of Sciences, SSSR (Institut elementoorganicheskikh soedineniy Akademii nauk SSSR); All Union Scientific Research Institute for Fiber Glass (Vsesoyunnyy nauchno-issledovatel'skiy institut steklyannogo volokna)

TITLE: Radiation-chemical synthesis of new mineral-organic ion-exchange materials

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 11, 1965, 2071-2072

TOPIC TAGS: ion exchange, ion exchange resin, hydrogen ion, positive ion, silica gel, radiation chemistry, polymerization, polymer

ABSTRACT: The possibility of obtaining new ion-exchange materials by means of a gas-phase radiation-chemical synthesis was investigated to extend the work of Ye. V. Yegorov, P. D. Novikov, D. P. Rasgon, and B. L. Tsetlin (Dokl. AN SSSR 146, 1360, 1962). The synthesis consisted of a graft polymerization of styrene, vinylpyridine, and dichloranhydride of vinylphosphonic acid to silica gel, fiber

Cord 1/3

UDO: 541.15+542.91+661.183.123

L 19884-66

AGC NR: AP6002103

glass, and zirconium oxide. The experimental procedure followed is described by B. L. Tsetlin, S. R. Rafikov, L. I. Plotnikova, and P. Ya. Glazunov (Avtorskoye svidetel'stvo No. 140985.5.I, 1961; Tr. II Vses. soveshchaniya po radiatsionnoy khimii, Izd-vo AN SSSR, M., 1962, str. 497). The radiation-chemical yield and the yield of homopolymer and graft polymer as a function of radiation dosage are tabulated. The rate of ion exchange between  $H^+$  and  $Na^+$  was investigated. The results are presented graphically (see Fig. 1). It was found that the ion-exchangers had an exchange capacity of 1--2 mg-eq/g, did not swell in aqueous

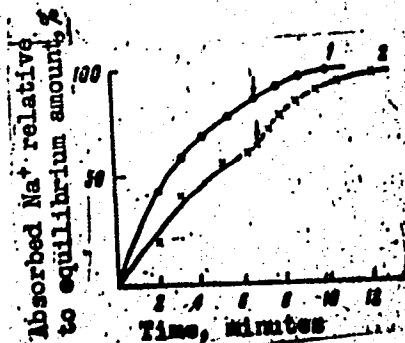


Fig. 1. Rate of exchange between  $H^+$  and  $Na^+$  on a mineral-organic cation-exchanger based on sulfated polystyrene and silica gel KSK (1) and cation-exchanger KU-2 (2). Arrows indicate the removal of adsorbents from solution for 12 hours.

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L 19884-66

ACC NR: AP6002103

2  
solution, and possessed high radiation-chemical stability. The authors thank  
B. L. Tsetlin and S. R. Rafikov for taking part in the evaluation of the  
experimental results. Orig. art. has: 1 table and 1 graph.

SUB CODE: 07/ SUBM DATE: 31Mar65/ ORIG REF: 003

Card 3/3

vmb

L 35922-66 EWT(m)/EWP(e) WW/NH

ACC NR: AP6012132 (A) SOURCE CODE: UR/0413/66/000/007/0051/0051

INVENTOR: Aslanova, M. S.; Syritskaya, Z. M.; Feykners, S. Ya.;  
Zak, A. F.; Khomutov, A. I.

ORG: none

TITLE: Glass. Class 32, No. 180317 /announced by All-Union Glass Fiber  
Research Institute (Vsesoyuznyy nauchno-issledovatel'skiy institut steklyannogo volokna)

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki,  
no. 7, 1966, 51.

TOPIC TAGS: glass, glass composition, GLASS FIBER, GLASS PROPERTY

ABSTRACT: An Author Certificate has been issued describing the  
composition of glass containing  $P_2O_5$ ,  $SiO_2$ ,  $TiO_2$ ,  $Al_2O_3$ ,  $MgO$ , which  
is intended for the manufacture of glass fiber. To produce a fiber  
with high absorption properties, the following wt. (%) of the above  
components are suggested:  $P_2O_5$ , 40.0—55.0;  $SiO_2$ , 32.0—43.0;  $TiO_2$ ,  
4.0—6.0;  $Al_2O_3$ , 3.0—8.0;  $MgO$ , >1.0; and  $CaO$ , 3.0—5.0. [LD]

/Translation of abstract/

SUB CODE: 11/ SUBM DATE: 12Feb65

Card 1/1 *ell*

L 44366-66 EWT(m)/EWP(l)/EWP(k)/T/EWP(e)/EWP(t)/ETI IJP(c) RM/WH/WH/JD  
ACC NR: AP6019736 (A) SOURCE CODE: UR/0063/66/011/003/0348/0350

AUTHOR: Noanikov, A. F.; Borodushkina, Kh. N.; Boguslavskiy, D. B.; Chernukhina, A. F.; Khemutov, A. I.; Blokh, G. A.

ORG: Dnepropetrovsk Institute of Chemical Technology im. F. E. Dzerzhinskiy  
(Dnepropetrovskiy khimiko-tehnologicheskii institut); Dnepropetrovsk Tire Plant  
(Dnepropetrovskiy shinnyy zavod); VNII of Glass Fibers (VNII steklovolokna)

TITLE: Porous silicon fibers acting as carriers of gaseous vulcanizing agents and accelerators

SOURCE: Vses khim obshch. Zh, v. 11, no. 3, 1966, 348-350

TOPIC TAGS: vulcanization, rubber, silicon plastic

ABSTRACT: The effect of porous silicon fibers containing hydrogen sulfide, ammonia, and sulfur dioxide on the physicomachanical properties of tire rubbers was investigated. The pore diameters ranged from 2.8 Å to 75 Å. The vulcanization temperature was 143-163°C and the vulcanization duration was 10-80 minutes. The fiber contents in the rubber were as high as 10%. Up to 10 wt %, the incorporation of the silicon fibers affected neither the vulcanization process nor the mechanical properties of the tire rubbers. It was found that rubbers prepared using ammonia accelerator were qualitatively as good as those vulcanized with sulfur compounds and diphenylguanidine ac-

UDC: 666.86+675.5

Card 1/2

ACC NR: AT6034057

SOURCE CODE: UR/0000/66/000/000/0160/0164

AUTHOR: Morozov, Yu. L.; Vitushkin, N. I.; Glazunov, P. Ya.; Rafikov, S. R.;  
Khomutov, A. I.; Tsetlin, B. L.

ORG: Institute of Organometallic Compounds AN SSSR (Institut elementoorganicheskikh soyedineniy AN SSSR); Scientific Research Institute for Fiberglass (Nauchno-issledovatel'skiy institut steklovolokna); Institute of Physical Chemistry AN SSSR (Institut fizicheskoy khimii AN SSSR)

TITLE: Radiation gas phase graft polymerization on glass fibers

SOURCE: Simpozium po radiatsionnoy khimii polimerov. Moscow, 1964. Radiatsionnaya khimiya polimerov (Radiation chemistry of polymers); doklady simpoziuma. Moscow, Izd-vo Nauka, 1966, 160-164

TOPIC TAGS: radiation polymerization, graft copolymer, polymerization kinetics, glass fiber, acrylonitrile

ABSTRACT: The kinetics of radiation gas phase graft polymerization onto inorganic surfaces were investigated using X ray tube TRTs-3a as the radiation source, acrylonitrile as the monomer, and three types of glass fibers as substrate—  
1) conventional nonalkaline nonporous glass fiber, 6-7 micron diameter; 2) fine-pored (6-7 Å effective pore diameter) fiber made by treating the former with hydrochloric

Cord 1/2

ACC NR: AT6034057

acid; and, 3) coarse-pored fiber (40 Å effective pore diameter) made by acid treatment of sodium borosilicate fiberglass. Reaction rates were measured directly under the beam with the help of a McBain type device. Induction of the graft polymerization reaction on the nonporous fiber was slow; with the porous materials the induction period was short, with more polymer forming on the coarser material. However when the pores were filled, the graft polymerization reaction rate was about the same as on the nonporous surface. Initial polymerization rates on all three fibers reached limiting values with monomer concentrations—at acrylonitrile vapor pressures were well under 100 mm Hg. In the porous samples the process rate is a linear function of the sorbed monomer concentration; the energy of activation is about 3 kcal/mol. The polymerization rate is proportional to the square root of the dosage for nonporous substrates—glass fiber, aerosil, powdered silica gel. Radical reaction mechanism was confirmed. The polymerization rate is a linear function of the dosage for the fine pored material, probably due to steric hindrance inside the pores rather than to a different reaction mechanism. Reaction initiation on metallic oxide and silicate materials is probably associated with the formation of the oxygen ion radical under ionizing radiation. Orig. art. has: 4 figures.

SUB CODE: 07, 11/ SUBM DATE: 25-Jul-66/ ORIG REF: 007

Card 2/2

KUZOVKOV, M.M.; KARMANOVA, L.S.; MATVEYEV, V.K.; KHOMUTOV, A.M.

Fluorescent road signs. Avt.dor. 26 no.9:5-6 S '63. (MIRA 16:10)

KHEMUTOV, P.M.  
 Polymer of petrol oil. A.M. KHEMUTOV. J. Applied Chem (U.S.S.R.),  
 1957, 30(1011). High grade lubricants can be obtained by replacing mineral oil with  
 petrol oil, whose properties are considerably improved by the use of deter (salts of Fe  
 or Cu). V. KALICHMANOV

METALLURGICAL LITERATURE CLASSIFICATION  
 620.172.01(1011)

26

*BC*

*P II 10*

Use of sulfonamide salts in quercetin extracts.  
A. B. S. (Tech. Notes, From, 1932, 243).—  
Quercetin extract was treated with 10% (of dry wt.)  
of a 1:1 mixture of 1- and 2-O, 3-, 6-O, 7- and 8%,  
NaHSO<sub>3</sub>. After being heated for 6 hr., cooled, and  
diluted, the extract contained no insol. matter, and  
there was a 3% increase in tannin content. On Abs.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

FROM STUNSHIV      FROM SCHWIRV

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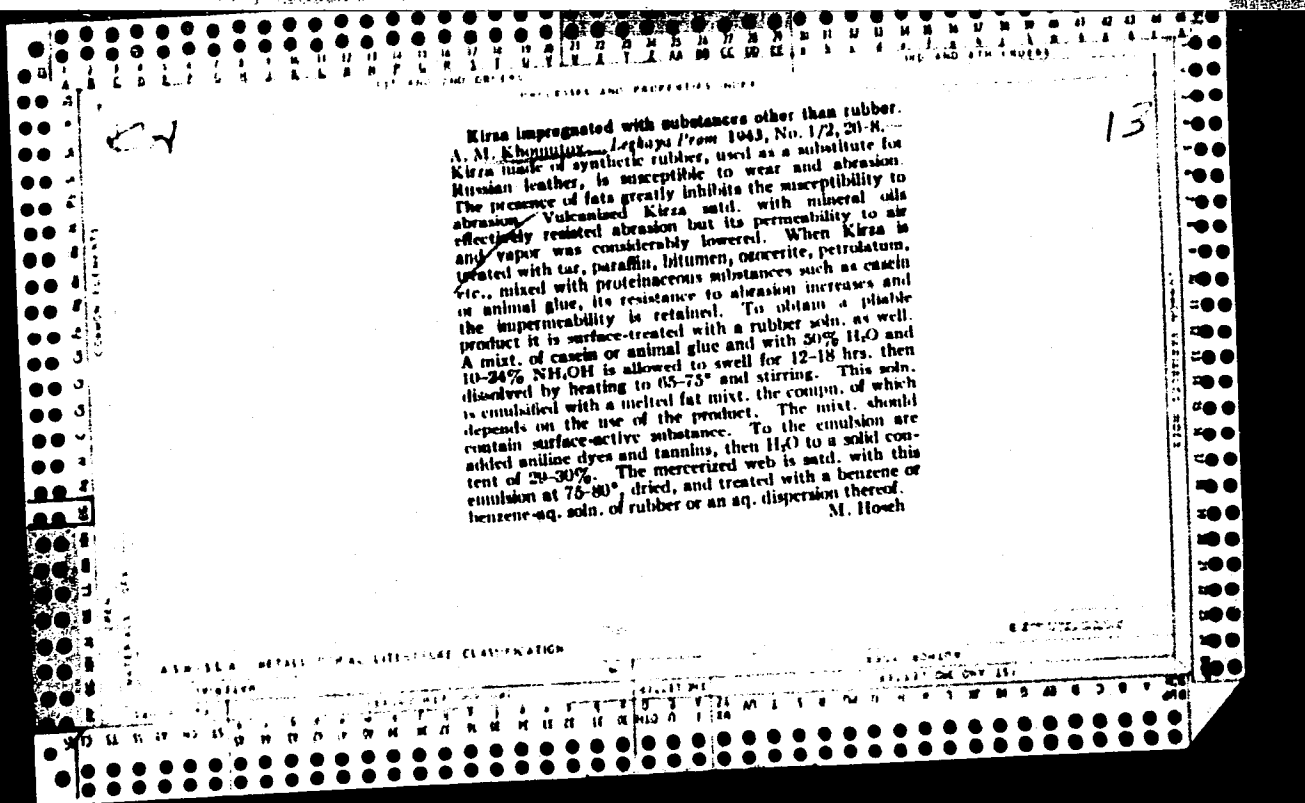
1ST AND 2ND ORDERS																										3RD AND 4TH ORDERS																									
PROCESSES AND PROPERTIES INDEX																																																			
<p><i>ca</i></p> <p><i>27</i></p> <p>Polymerization of perilla oil A. M. Khamutov  <i>Applied Chem. (U. S. S. R. 1977, 100(111811))</i> The            constants of perilla oil are changed by refining and the            viscosity of the refined oil increases more rapidly upon            heating than that of the unrefined. Polymerization in a            closed container is more effective than polymerization in            an open container. The viscosity of the oil increases more            rapidly on intermittent than on continuous heating.            The polymerized oil remains unchanged for a long time            if it is hermetically sealed. A. A. Bochtlingk</p>																																																			
ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION																																																			
MATERIALS INDEX																																																			
COMMON VARIABLE INDEX																																																			
COMMON VARIABLE INDEX																																																			

1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
PROCESSES AND PROPERTIES INDEX																			
<p><i>ca</i></p> <p>Coating of double fabrics, used in the manufacture of harness and saddles, with coats of rubber-essoin. I. V. Plonnikov, A. M. Khumutov and A. A. Minrev. <i>Aos. Arvans (Moscow)</i> 77: 518-20 (1935); <i>Chem. Zentr.</i> 1936, I, 4630.--- Directions are given for the prepn. of such mltis. and their application. M. G. Maier</p>																			
<p>ASB-5LA METALLURGICAL LITERATURE CLASSIFICATION</p>																			
12000 STYRENE										120000 NIT OXY OIL									
120000 ST										120000 ST									

*Saddle and harness leather substitute.* I. V. Plotnikov  
and A. M. Khomutov. *Kozhevno-Obozraznyy Prom.*  
*A. S. S. R. B., No. 11, 88 (1930).* Several formulas  
for the prepn. of leather substitutes with synthetic and  
natural rubber are worked out on the basis of the German  
patent 373 414

26

Air-permeable lacquers for cloth, shoe uppers and leather substitutes. A. M. Khamutov and I. V. Mor-nikov. *Koskovens Obzornye Prom.* U. S. S. R. 19, No. 12, 62-4(1938).—Seventeen formulas are given for the prepn. of nitrocellulose, nitro-rubber, rubber and rub-ber-caswin films.  
A. A. Podgorny



1ST AND 2ND ORDERS  
 PROCESSES AND PREPARATION  
 30

Leather substitute. V. M. Rogov, A. M. Khomutov,  
 I. V. Plotnikov, P. I. Pavlovich, F. G. Stratilatov, and  
 K. K. Gavrikov. U.S.S.R. 67,300, Dec. 31, 1948. A  
 fabric is impregnated with a protein-fat emulsion. The  
 fabric is then treated with a moln. or dispersion of rubber  
 after which it is finished and vulcanized. M. Hosh

1ST AND 2ND ORDERS  
 PROCESSES AND PREPARATION

KHOMUTOV, A. M.

Chemical Abstracts  
May 25, 1954  
Synthetic Resins  
and Plastics

Chemical transformations of unsaturated and high-molecular compounds. I. Copolymerization of methacrylic acid and vinyl alkyl ethers. M. P. Shostakovskii and A. M. Khomutov (Inst. Org. Chem., Acad. Sci. U.S.S.R., Moscow); *Izv. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1953, 1048-55.—Vinyl alkyl ethers and  $\text{CH}_2=\text{C}(\text{Me})\text{CO}_2\text{H}$  were copolymerized by heating in ampuls 72 hrs. at  $60^\circ$ . The copolymer of  $\text{EtOCH}=\text{CH}_2$  was a hard solid when the components were used in 3:1 molar ratio (excess acid), but were viscous liquids when the ether was the predominant component. The copolymer from 3 moles  $\text{BuOCH}=\text{CH}_2$  and 1 mole  $\text{CH}_2=\text{C}(\text{Me})\text{CO}_2\text{H}$  was a solid contg. 40.1% ether groups and was insol. in  $\text{H}_2\text{O}$ , forming a gel in  $\text{MeOH}$ ; reversal of the proportions of monomers gave a solid product which was sol. in  $\text{MeOH}$  and which swelled and partly dissolved in  $\text{H}_2\text{O}$ .  
G. M. Kosolapoff

Резюме, А.М.

# USSR

✓ Synthesis and transformations of vinyl ethers of ethanolamines. IV. Copolymerization of vinyl ether of 2-aminoethanol and methyl ester of methacrylic acid. M. P. Shostakovskii, I. A. Chekulavaya, and A. M. Khomutov (N. D. Zelinskii Inst. Org. Chem., Acad. Sci. U.S.S.R., Moscow). *Izvest. Akad. Nauk S.S.S.R., Otd. Khim. Nauk* 1954, 323-8; cf. C.A. 48, 5794A. — Pure  $\text{CH}_2=\text{CHO}-\text{CH}_2\text{CH}_2\text{NH}_2$  does not polymerize under action of  $\text{Br}_2\text{O}_2$  in 100 hrs. at  $60^\circ$ . In mixts. with Me methacrylate it copolymerizes in varying proportions, yielding products contg. 0.25-5.3% N; the copolymers with appreciable amts. of N are generally insol. and infusible. No polymer of Me methacrylate usually forms in the course of copolymerization, but the yields of the copolymer are usually quite low. Expts. with copolymerization yielded varying amts. of  $\text{CH}_2=\text{CHOCH}_2\text{CH}_2\text{NHCH}_2\text{CHMeCO}_2\text{Me}$ ,  $b_p$   $97.5^\circ$ ,  $n_D^{20}$  1.4491,  $d_4^{20}$  0.9908, which hydrogenated over Raney Ni to the satd. analog,  $b_p$   $82^\circ$ ,  $n_D^{20}$  1.4333,  $d_4^{20}$  0.9688.

G. M. Koshlupoff

KHOMUTOV, A.M.

USSR/Chemistry      Copolymerization

Card : 1/1

Authors : Shostakovskiy, M. F., and Khomutov, A. M.

Title : Study of chemical conversions of unsaturated and high-molecular compounds.  
Part 2.- Copolymerization of methyl methacrylate and vinyl alkyl ethers

Periodical : Izv. AN SSSR, Otd. Khim. Nauk., 3, 484 - 490, May - June 1954

Abstract : The copolymerization of methyl acrylate and vinyl alkyl ethers was investigated at different ratios under the effect of benzoyl peroxide. The copolymeric products obtained are described. Benzoyl peroxide promotes the copolymerization of vinyl alkyl ethers with compounds containing multiple  $C = C - C = O$  bonds. The reason for not finding methyl methacrylate polymers during the polymerization under the effect of benzoyl peroxide is explained. Sixteen references: 11 USSR; 1 German, 4 USA. Tables.

Institution : Acad. of Sc. USSR, The N. D. Zelinskiy Institute of Organic Chemistry

Submitted : March 20, 1953

KHOMUTOV, A.M.

62 ✓ Chemical transformations of unsaturated and high molecular weight compounds. III. Copolymerization of methacrylic acid and its methyl ester with vinyl phenyl ether. M. F. Shostakovskii and A. M. Khomutov (N. D. Zelinskii Inst. Org. Chem., Acad. Sci. U.S.S.R., Moscow). *Izv. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1954, 1921-30; cf. *C.A.* 49, 1991g. — Copolymerization of  $\text{PhOCH}:\text{CH}_2$  with  $\text{CH}_2:\text{CMeCO}_2\text{H}$  (I) and its Me ester (II) were run at 60° in the presence of 0.2%  $\text{Bz}_2\text{O}_2$ ; a 1:1 ratio of the ether and II gave a copolymer sol. in 1:1  $\text{BuOH}:\text{PhOCH}:\text{CH}_2$ . At 1/3 ratio of II and  $\text{PhOCH}:\text{CH}_2$  the copolymer was formed similarly and its sol. was similar to the above. As the proportion of  $\text{PhOCH}:\text{CH}_2$  in the initial mixt. was raised from 25% to 75%, the content of  $\text{PhOCHCH}_2$  unit in the copolymer rose from 11.5 to 34.6%, but the yield of the copolymer declined from 76% to 10.58%. The abs. viscosity of the product declined from 0.021 to 0.0081, and relative viscosity from 2.89 to 1.00. Interaction of I and  $\text{PhOCH}:\text{CH}_2$  in 3/1 ratio gave a 10% yield of product, contg. 57.83% I units. At 1:1 proportion of reactants, the product contained 42% I units and had mol. wt. 2765, while at 1:3 reactant proportion the product contained 53.5% I units. The liquid residue contained appreciable amts. of  $\text{CH}_2:\text{CMeCO}_2\text{CHMeOPh}$ . The results indicate that along with copolymerization side reactions take place which result in formation of acrylates. G. M. Kosolapoff.

1. Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR.

*Khomutov, A.M.*

USSR/Chemistry - Conversions

Card 1/1 Pub. 40 - 16/27

Authors : Shostakovskiy, M. F., and Khomutov, A. M.

Title : Study of chem. conversions of unsaturated and high-molecular compounds.  
Part 4. Copolymerization of certain vinyl compounds with monovinyl ether  
of ethylene glycol

Periodical : Izv. AN SSSR. Otd. khim. nauk 1, 126-132, Jan-Feb 1955

Abstract : The characteristics of copolymerization reactions of monovinyl ether of  
ethylene glycol with methacrylic acid, its methyl ether and styrene are  
explained. The synthesis of copolymers of methacrylic acid and its met-  
hyl ether with monovinyl ether of ethylene glycol is described. The effect  
of a monovinyl ether increase in the reaction medium on the yield of copoly-  
mers is discussed. It is shown that styrene monovinyl ether of ethylene  
glycol do not form copolymers in the presence of benzoyl peroxide. Nine  
Russian and USSR references (1869-1954). Tables.

Institution : Acad. of Sc., USSR, The N. D. Zelinskiy Inst. of Org. Chem.

Submitted : September 25, 1953

*Khomutov, A. M.*

USSR/Chemistry - Conversions

Card 1/2 Pub. 40 - 17/27

Authors : Shostakovskiy, M. F., and Khomutov, A. M.

Title : Chemical conversions of unsaturated and high-molecular compounds. Part 5.  
Copolymerization of methyl ether of acrylic acid and vinyl ethers

Periodical : Izv. AN SSSR. Otd. khim. nauk 1, 133-139, Jan-Feb 1955

Abstract : The conditions favorable for the copolymerization of methyl ether of acrylic acid (methyl acrylate) with vinyl ethyl, vinyl-n-butyl and vinyl phenyl ethers are described. It is shown that the composition of the copolymers depends largely upon the vinyl ether and methyl acrylate concentrations in the reaction mixture.

Institution : Acad. of Sc., USSR, The N. D. Zelinskiy Inst. of Org. Chem.

Submitted : December 23, 1953

Card 2/2 Pub. 40 - 17/27

Periodical : Izv. AN SSSR. Otd. khim. nauk 1, 133-139, Jan-Feb 1955

Abstract : Methyl acrylate and vinyl ether copolymers were found to possess a greater number of vinyl ether rings in their composition than the copolymers formed by methyl metacrylate and vinyl ethers. Nine references: 8 Russian and USSR and 1 USA (1869-1954). Tables

Khomutov, A.M.

✓ Chemical transformations on unsaturated and high-molecular weight compounds. VI. Copolymerization of vinylcaprolactam and methyl methacrylate in the presence of benzoyl peroxide and the dinitrile of 2,2'-azodiisobutyric acid. M. P. Shustakovskii, F. P. Sidel'kovskaya, and A. M. Khomutov (N. D. Zelinskii Inst. Org. Chem., Moscow). *Izv. Akad. Nauk S.S.S.R., Khim. Khim. Nauk* 1935, 910-21; cf. C.A. 47, 9917g; 48, 0180e; 59, 1674k. --Vinylcaprolactam and MeO<sub>2</sub>CCMe:CH<sub>2</sub> were copolymerized in the presence of either Br<sub>2</sub>O<sub>3</sub> or (:NCMe<sub>2</sub>CN)<sub>2</sub> in various proportions of the monomers. The content of methacrylate links in the copolymers ranged from 85.7 to 27.6 mole-%. The products were sol. in Me<sub>2</sub>CO, C<sub>6</sub>H<sub>6</sub>, and EtOH but insol. in Et<sub>2</sub>O; those with high content of methacrylates were insol. in H<sub>2</sub>O. The polymerizations were run at 60° for 48-72 hrs. with 0.2% initiator. The copolymers appeared to be inhomogeneous in their behavior with solvents, but no polymers of the initial monomers alone were found.

G. M. Kosolapoff

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Chem

NA

KHOMUTOV, A. M.

Free radical polymerization and copolymerization of  $\beta$ -butoxyethyl vinyl sulfide. M. P. Shostakovskii, E. N. Piletskaya, and A. M. Khomutov (N. D. Zelinski Inst. Org. Chem., Acad. Sci. U.S.S.R., Moscow). Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk 1956, 1230-5.  $\beta$ -butoxyethyl vinyl sulfide was polymerized with  $\text{Br}_2\text{O}_2$  or  $\text{BuOCH}_2\text{CH}_2\text{SCH}_2\text{CH}_3$  catalysts with kinetic curves shown. Isobutyronitrile copolymerizes with  $\text{CH}_3\text{C}(\text{Me})_2\text{CO}_2\text{Me}$  very readily, being more active than usual vinyl sulfides. Isobutyronitrile is a more effective catalyst than is  $\text{Br}_2\text{O}_2$ , yielding up to 65-8% polymer and 70-80% copolymer in 24 hrs. at  $60^\circ$ . The copolymers prep'd. contained from 0 to 100% vinyl sulfide units. G. M. Kosolapoff

1. Institut organicheskoy khimii imeni N.D. Zelinskogo Akademii nauk SSSR.

**AUTHORS:**

Shostakovskiy, M. F.; Khomutov, A. M.; Belyayev, V. I. 62-1-10/21

**TITLE:**

Investigation of Chemical Conversions of Unsaturated and High Molecular Compounds. Part 7. Copolymerization of Vinyltertiarybutyl Ether and Methyl Ether of Methacrylic Acid (Issledovaniya v oblasti khimicheskikh prevrashcheniy nepredel'nykh i vysokomolekulyarnykh soyedineniy. Soobshcheniye 7. Sopolimerizatsiya viniltretichnobutilovogo efira i metilovogo efira metakrilovoy kisloty)

**PERIODICAL:**

Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk, 1957, No. 1, pp. 70-74 (U.S.S.R.)

**ABSTRACT:**

The laws governing the copolymerization of vinyltertiarybutyl ether and methyl methacrylate are discussed. It was found that the yields of the copolymers obtained depend upon the chemical structure of the initiators. The reduction in the yields of copolymers on methylmethacrylate and vinyltertiary butyl ether is explained by the low activity of the polymerization chain having a butyl ether with free valence. The use of dinitrylazoisobutyric acid leads to the formation

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APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000722220012-3

Investigation of Chemical Conversions of Unsaturated and High Molecular Compounds. Part 7  
of a certain polymerization chain, which according to experiments has a much higher activity. Vinyltertiarybutyl ether, when heated with benzoyl peroxide, did not form any polymers and remained unchanged. The same result was obtained during heating with dinitrile asoisobutyric acid.

It was established that the vinyltertiarybutyl ether content in the copolymer with methylmethacrylate increases with the increase of its concentration in the initial monomer mixture.

Tables, graph. There are 7 Slavic references.

**ASSOCIATION:**

Academy of Sciences of the USSR, Institute of Organic Chemistry imeni N. D. Zelinskiy

**PRESENTED BY:**

**SUBMITTED:**

December 30, 1955

**AVAILABLE:**

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Card 2/2

*KHOMUTOV, A.M.*  
 AUTHORS:

Shostakovskiy, M. F., Khomutov, A. M., Alimov, A.P., 62-1-22/29

TITLE:

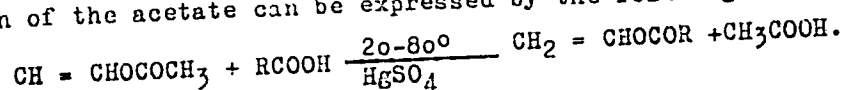
The Synthesis of the Complex Divinyl Ether of Tartaric Acid (Sintez slozhnogo divinilovogo efira vinnoy kisloty)

PERIODICAL:

Izvestiya AN SSSR Otdeleniye Khimicheskikh Nauk, 1958  
 Nr 1, pp 108 - 109 (USSR)

ABSTRACT:

The synthesis of the vinyl ethers by interaction between the vinyl acetate and alcohols or acids was already described in literature (references 1,2). Corresponding to the kind of reaction according to this method simple as well as complex vinyl ethers can be synthesized. The reaction of the acid vinylization with the action of the acetate can be expressed by the following equation:



By this way of indirect vinylization the composed vinyl ethers of the mono- and dibasic acids were obtained. The authors carried out the synthesis of the complex vinyl ethers with dibasic (4-atomic) oxyacid (d-tartaric acid) experimentally. The obtained divinyl ether of tartaric acid is a slightly colored viscous liquid which is soluble in sulphuric ether, acetone, benzene, and alcohol. The divinyl ether of tartaric acid is poly-

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The Synthesis of the Complex Divinyl Ether of Tartaric Acid 62-1-22/29

merizable in presence of benzoylperoxide or of the dinitryl of azoiso-butyric acid and co-polymerizes with the methyl ether of the methylacrylic acid. There are 4 references, 1 of which is Slavic.

ASSOCIATION: Insitute of Organic Chemistry imeni N. D. Zelinskiy, AS USSR  
(Insitut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR).

SUBMITTED: July 19, 1957

AVAILABLE: Library of Congress

1. Vinyl ethers-Synthesis

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5(3)

SOV/62-59-1-23/38

AUTHORS:

Khomutov, A. M., Shikhiyev, I. A., Komarov, N. V.,  
Alimov, A. P.

TITLE:

Investigations in the Field of Chemical Transformations of Unsaturated and High-Molecular Compounds (Issledovaniya v oblasti khimicheskikh prevrashcheniy nepredel'nykh i vysokomolekulyarnykh soyedineniy) Communication 8. Copolymerization of  $\gamma$ -Silicon—Containing Vinyl Ethers and Methyl Methacrylate (Soobshcheniye 8. Sopolimerizatsiya  $\gamma$ -kremnesoderzhashchikh prostykh vinilovykh efirov i metilmetakrilata)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 1, pp 140 - 143 (USSR)

ABSTRACT:

In the present paper the authors investigated the copolymerization of methyl methacrylate and vinyl ether which contain the silicon atom in  $\gamma$ -position with respect to ethereal oxygen. Ether of  $\gamma$ -hydroxy-propyl-trimethyl silane (Ref 1) and  $\gamma$ -hydroxy-propyl-methyl-diethyl silane (Ref 2) were used. These compounds were copolymerized in the presence of benzoyl peroxide and dinitrile of azoisob-

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Investigations in the Field of Chemical Transformations SOV/62-59-1-23/38  
of Unsaturated and High-Molecular Compounds. Communication 8: Copolymeri-  
zation of  $\gamma$ -Silicon-Containing Vinyl Ethers and Methyl Methacrylate

butyric acid. According to the experimental data obtained the following regularities were found: on the increase of  $\gamma$ -silicon-containing vinyl ether in the reaction medium the yield of copolymers is decreased while the number of the members of vinyl ether in them is increased (Fig). Similar rules have been already observed in the copolymerization of vinyl ether and vinyl ester (Ref 3). As may be seen from it, the content of  $\gamma$ -silicon-containing vinyl ether in the copolymer does not exceed 50 mol-%. The polymerization according to radical mechanism was not observed with  $\gamma$ -silicon-containing vinyl ether. As already mentioned in reference 4, it may be assumed that in this case reaction is started by a complex radical. The latter is produced by the addition of the more active monomer of methyl methacrylate to the radical which was formed in the decomposition of the initiator. A comparison between  $\gamma$ -silicon-containing vinyl ether and the vinyl alkyl ethers demonstrated that the reactivity of vinyl ether is reduced by the presence of silicon in  $\gamma$ -position (Table 1). The results of investiga-

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Investigations in the Field of Chemical Transformations SOV/62-59-1-23/38  
of Unsaturated and High-Molecular Compounds. Communication 8. Copoly-  
merization of  $\gamma$ -Silicon-Containing Vinyl Ethers and Methyl Methacrylate

tion mentioned in table 2) permit the conclusion that the substitution of ethyl groups for methyl groups reduces somewhat the yield of copolymers in the case of  $\gamma$ -silicon-containing ether. However, the composition of the copolymers is hardly affected by that. In the investigation of the copolymerization of  $\gamma$ -silicon-containing vinyl ether and methyl methacrylate it was stated that their copolymers receive new properties in the presence of silicon. There are 1 figure, 3 tables, and 4 Soviet references.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences, USSR)

SUBMITTED: May 22, 1957

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SOV/62-59-2-22/40

5(3)  
AUTHORS:

Khomutov, A. M., Mamedov, M. A.

TITLE:

Investigations in the Field of Chemical Transformations in Unsaturated and High Molecular Weight Compounds (Issledovaniya v oblasti khimicheskikh prevrashcheniy nepredel'nykh i vysokomolekulyarnykh soyedineniy). Communication 9. Copolymerization of Vinyl Isopropyl Ether With Methyl Ester of Acrylic Acid (Soobshcheniye 9. Sopolimerizatsiya vinilizopropilovogo efira s metilovym efirrom akrilovoy kisloty)

PERIODICAL:

Izvestiya Akademii nauk SSSR, Otdeleniye khimicheskikh nauk, 1959, Nr 2, pp 327-330 (USSR)

ABSTRACT:

In the present paper data on the copolymerization are given in which 95 mol % of vinyl ether (vinyl isopropyl) were used. The second more active monomer was the methyl acrylate (Ref 8). The copolymerization was investigated at unequal ratio of the initial monomers. Benzoyl peroxide and dinitrile of the azoisobutyric acid were used as initiators. The reaction lasted up to the maximum utilization of the initial monomers. As a result the following connection (Ref 9) between the concentration of the initial monomers, the composition and yield of copolymers

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SOV/62-59-2-22/40

Investigations in the Field of Chemical Transformations in Unsaturated and High Molecular Weight Compounds. Communication 9. Copolymerization of Vinyl Isopropyl Ether With Methyl Ester of Acrylic Acid

was confirmed: On an increasing molar part of vinyl ether in the reaction medium the yields decrease, at the same time the number of chain links in the copolymer increases (Fig). It may be seen from it that the copolymers do not contain more than 50% of the chain links of vinyl ether. At considerable excess of vinyl isopropyl ether in the reaction medium copolymers with apparently regularly alternating chain links are thus formed (Ref 10). There are 1 figure, 2 tables, and 10 references, 9 of which are Soviet.

ASSOCIATION:

Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences, USSR) Institut khimii Akademii nauk AzSSR (Institute of Chemistry of the Academy of Sciences, Azerbaydzhanskaya SSR)

SUBMITTED:  
Card 2/2

June 6, 1957

SOV/62-59-3-21/37

5(3)

AUTHOR:

Khomutov, A. M.

TITLE:

Investigations in the Field of Chemical Conversions of Unsaturated and High-molecular Compounds (Issledovaniya v oblasti khimicheskikh prevrashcheniy nepredel'nykh i vysokomolekulyarnykh soyedineniy). Communication 10. On the Competing Reactions During the Copolymerization of Some Vinyl Ethers With Methacrylic Acid and Its Methyl-esters (Soobshcheniye 10. O konkuriruyushchikh reaktsiyakh pri sopolimerizatsii nekotorykh prostykh vinilovykh efirov s metakrilovoy kislotoy i yeye metilovym efirov)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 3, pp 521 - 527 (USSR)

ABSTRACT:

In the present paper the copolymerization of vinyl ether with methacrylic acid and methyl methacrylate in the presence of benzoyl peroxide as initiator was investigated. On the basis of the investigations carried out the reactivity of the vinyl ethers containing functional groups with mobile hydrogen during the copolymerization with methacrylic acid and with methyl methacrylate may be characterized in the following way:

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Investigations in the Field of Chemical Conversions of      SGV/62-59-3-21/37  
Unsaturated and High-molecular Compounds. Communication 10. On the Competing  
Reactions During the Copolymerization of Some Vinyl Ethers With Methacrylic  
Acid and Its Methyl-esters

the copolymerization processes of vinyl compounds containing functional groups with mobile hydrogen are accompanied by competing reactions - polymerization and formation of mono-molecular compounds. This process becomes the more complicated the more new products are formed which take part in the reaction and which favour the formation of the three-dimensional copolymers. In spite of the complicated chemical process it is possible - if the chemical structure of the initial monomers is known - to indicate probably stable substances for the copolymerizing couples. Following the kinetic investigation of the elementary reaction processes, the mechanism of the competing reactions, which depends on the chemical structure of the substance and of the reaction medium can be determined. There are 1 figure, 3 tables, and 12 references, 11 of which are Soviet.

ASSOCIATION:      Institut organicheskoy khimii im. N. D. Zelinskogo Akademii  
nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy  
of the Academy of Sciences, USSR)

*Khomutov, A. M.*

81935  
S/062/60/000/06/06/011  
B020/B061

53831

AUTHORS:

Shostakovskiy, M. F., Khomutov, A. M.

TITLE:

Studies in the Field of Chemical Transformations of Unsaturated and High-molecular Compounds. 14. Copolymerization of Trivinylglycerol Ether<sup>1</sup> With Methacrylic Acid and Its Methyl Ester

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1960, No. 6, pp. 1104 - 1107

TEXT: From the different types of copolymerization which lead to the formation of three-dimensional polymers, the authors chose new types of copolymerization, which differ in that unsaturated compounds with functional groups are used with them. (Refs. 1,2). As an example, the copolymer of methylmethacrylate and the vinylether of  $\beta$ -aminoethanol was used. The study of the copolymerization of vinylethers containing two or three vinyl groups in the molecule, is most interesting. For this purpose, the trivinylglycerol ether was taken (Ref. 3), and as second component

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81935

Studies in the Field of Chemical Transformations of Unsaturated and High-molecular Compounds. S/062/60/000/06/06/011  
14. Copolymerization of Trivinylglycerol Ether B020/B061  
With Methacrylic Acid and Its Methyl Ester

methacrylic acid and its methyl ester were used. On the examination of the conditions of copolymerization of trivinylglycerol ether with methacrylic acid, the following reactions may be expected: a) formation of copolymers containing free vinyl groups, b) formation of branched copolymers, and c) formation of three-dimensional copolymers insoluble in organic solvents. From this it follows that the copolymerization of trivinylglycerol ether and methacrylic acid takes place in several directions, and a complicated mixture of copolymers is formed. No formation of three-dimensional copolymers was found on the copolymerization of trivinylglycerol ether with the methyl ester of methacrylic acid. The copolymerization of trivinylglycerol ether with methacrylic acid and its methyl ester is precisely described in the experimental part. The yield and composition of the copolymers of trivinylglycerol ether and methacrylic acid (Table 1), and of methylmethacrylate (Table 2), are given. There are 2 tables and 5 Soviet references.

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S/062/60/000/009/016/021  
B023/B064

AUTHORS: Shostakovskiy, M. F. and Khomutov, A. M.  
TITLE: Studies in the Field of the Chemical Conversions of  
Unsaturated and Highmolecular Compounds. Communication 15.  
Copolymerization of Some Divinyl Ethers With Methacrylic  
Acid

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh  
nauk, 1960, No. 9, pp. 1681-1686

TEXT: In continuation of their previous papers (Refs. 1 and 2), the authors studied the behavior of some representatives of vinyl ethers in the copolymerization with methacrylic acid. The following two compounds were used:  $\text{CH}_2 = \text{CHOCH} = \text{CH}_2$  (I),  $\text{CH}_2 = \text{CHOCH}_2\text{CH}_2\text{OCH} = \text{CH}_2$  (II). The ether (I) rather tends to reactions with radical mechanism (Ref. 3). It polymerizes readily when stored and in the presence of initiators (benzoyl peroxide and dinitrile of azoisobutyric acid). The ester (II) does not polymerize under the action of the mentioned initiators, but does so

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Studies in the Field of the Chemical Conversions S/062/60/000/009/016/021  
 of Unsaturated and Highmolecular Compounds. B023/B064  
 Communication 15. Copolymerization of Some Divinyl  
 Ethers With Methacrylic Acid

readily in the presence of iron chloride (Ref. 4). The authors assume that these divinyl ethers, like the vinyl alkyl ethers, enter a copolymerization reaction with methacrylic acid and form acylals at the same time. The first experimental series of the copolymerization of (I) with methacrylic acid was carried out in the presence of benzoyl peroxide. At an increase of the amount of divinyl ether in the reaction medium, the copolymer yields decrease, while the number of the chain links in the ether rises (Fig. 1). The second experimental series was carried out in the presence of dinitrile of azoisobutyric acid. Fig. 1 shows the data on the dependence between yields, compositions, and molar concentration of the initial monomers. At an increase of the divinyl ether concentration in the reaction medium, the copolymer yields decrease first, then increase, and the number of the chain links of divinyl ether increases. Acylals (III) were found in the copolymer forming in consequence of competing reactions. When comparing the copolymerization of the divinyl ester with methacrylic acid in the presence of benzoyl peroxide and the dinitrile of azoisobutyric acid, the authors found that the kind of the initiator exerts a considerable

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Studies in the Field of the Chemical Conversions of Unsaturated and Highmolecular Compounds.  
Communication 15. Copolymerization of Some Divinyl Ethers With Methacrylic Acid S/062/60/000/009/016/021  
B023/B064

influence upon the yield and the composition of the copolymers (Fig. 1). The copolymers have in both cases a three-dimensional structure and the number of the chain links of divinyl ether (I) amounts to more than 50 mole%. The vinyl alkyl ethers, forming linear copolymers with methacrylic acid, give, however, a maximum of 50 mole% of the chain links. The copolymerization under the participation of ethylene glycol divinyl ether (II) with methacrylic acid takes a course different from case (I), and is similar to the reactions with vinyl alkyl ethers. Copolymers with more than 15% chain links of divinyl ethylene glycol, have a three-dimensional structure. A relation exists between the composition of the copolymers, the yields and concentrations of the initial monomers (Ref.7). This dependence is linear (Fig. 2). The copolymers were subjected to hydrolysis to determine their composition. The content of acylals in these copolymers is considerably higher than in copolymers with (I). This may be explained by the fact that (II) tends less toward reactions of the type of a radical mechanism than (I). There are 2 figures, 4 tables, and 7 references: 6 Soviet and 1 US. ✓

Card 3/4

Studies in the Field of the Chemical Conversions S/062/60/000/009/016/02;  
of Unsaturated and Highmolecular Compounds. B023/B064  
Communication 15. Copolymerization of Some  
Divinyl Ethers With Methacrylic Acid

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii  
nauk SSSR (Institute of Organic Chemistry imeni N. D.  
Zelinskiy of the Academy of Sciences USSR) ✓

SUBMITTED: April 14, 1959

Card 4/4

S/081/61/000/021/017/094  
B102/B138

**AUTHORS:**

Deryagin, B. V., Zakhavayeva, N. N., Andreyev, S. V.,  
Milovidov, A. A., Khomutov, A. M.

**TITLE:**

Filming the flow of thin layers of polymer solutions

**PERIODICAL:**

Referativnyy zhurnal. Khimiya, no. 21, 1961, 65, abstract  
21B525 (Sb. "Issled. v. obl. poverkhnostnykh sil", M.,  
AN SSSR, 1961, 139-142)

**TEXT:** The authors improve on an earlier method (RZhKhim, 1954, no. 12, 30393; 1957, no. 23, 74075) for investigating the rheological properties of thin layers of solutions by blowing, introducing the use of moving pictures. The apparatus is described. It gives a complete picture of the process of blowing the liquid layer. Photographs of the interference bands are shown for turbine oil, vinyl polymer and its solutions in turbine oil. [Abstracter's note: Complete translation.]

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89912

S/062/61/000/002/009/012  
B115/B207

53831

2209, 1372, 1234

AUTHOR:

Khomutov, A. M.

TITLE:

Study of the chemical conversion of unsaturated and high-molecular compounds. Report no. 16. Copolymerization of vinyl ethers and vinyl esters

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, no. 2, 1961, 352-357

TEXT: On the basis of experimental data (Ref. 6, M. F. Shostakovskiy and A. M. Khomutov, this periodical, 1954, 484; Ref. 5; V. A. Gladyshevskaya, dissertation, Moscow, 1954), the author explains the reactivity of vinyl ethers (vinyl ethyl- and vinyl phenyl ethers) in the copolymerization with methyl methacrylate (I) in the presence of azoisobutyric acid dinitrile (III) and benzoyl peroxide. He studied these reactions under conditions of maximum conversion of initial monomers, and obtained copolymers containing a maximum of 50 mole% of vinyl ether links. Table 2 shows the dependence of the yields and composition of copolymers of vinyl butyl ether (II) and (I) on the

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reaction temperature and the type of initiator. It is true that (III) increases the number of links in the copolymer, but only to a maximum of 50 mole%. Temperature rise reduces this percentage. Therefrom, the author concludes that, though vinyl ethers polymerize according to the radical mechanism, they add to their own radical in the copolymerization. Thus, they behave in the same way as in heteropolymerization. Therefore, the author rejects the theory of S. N. Ushakov and collaborators (Ref. 3, Uspekhi khimii, 3, 1950, 365) according to which the polymers that are not capable of adding to their own radical cannot polymerize. He is of the opinion that it is important to know at least the relative addition rates of the monomers to a "foreign" radical to be able to judge the reactivity of vinyl ethers, since no method of determining these rates (whether absolute or relative) exists for vinyl ethers. The author developed such a method by eliminating the addition of monomers to a radical "of their own". For this purpose, he evaluated his experimental data (Ref. 9, A. M. Khomutov, dissertation, Moscow, 1954) on vinyl ethers and -esters, and derived the following dependence between the initial concentration ( $M_2$ ) of vinyl ethers in the reaction

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medium and the number of vinyl ether links ( $m_2$ ) in the polymer; it is linear (Fig. 1):  $m_2 = KM_2$  (1), where  $M_2$  and  $m_2$  are expressed in mole%;  $K$  is the coefficient of proportionality corresponding to  $\tan \alpha$ ;  $\alpha$  = the angle between the axis of abscissas and the straight line of composition.  $M_2$  is given,  $m_2$  and  $K$  are experimentally determined (Table 4, values of  $K$ ).

$K$  characterizes the activity of vinyl ethers in their copolymerization with methyl esters of acrylic and methacrylic acid. If  $K$  is known, it is possible to determine by means of equation (1) the initial concentration of vinyl ethers at which their number of links in the copolymer reaches 50 mole%. As an example, the author determines  $M_2$  for a copolymer in

which the links of the vinyl-ethyl ether and of (I) alternate regularly. ✓

Its structure  $-\text{CH}_2 - \underset{\substack{| \\ \text{COOCH}_3}}{\text{CH}} - \text{CH}_2 - \underset{\substack{| \\ \text{OC}_2\text{H}_5}}{\text{CH}} - \text{CH}_2 - \underset{\substack{| \\ \text{COOCH}_3}}{\text{CH}} - \text{CH}_2 - \underset{\substack{| \\ \text{OC}_2\text{H}_5}}{\text{CH}} - \dots$

contains 50 mole% of each monomer;  $m_2 = 50$  mole%,  $K = 0.55$ ;

$M_2 = 90.9$  mole% (the required quantity of vinyl-ethyl ether);

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9.1 mole% of (I) are required. A regular alternation of links of different monomers at  $M_2 = 90.9$  mole% is only possible if no addition of initial monomers to "own" radicals takes place:

$m_1 + M_2 \xrightarrow{K_2} m_1 M_2 \cdot$  (2);  $m_2 + M_1 \xrightarrow{K_4} m_2 M_1 \cdot$  (3), where  $m_1$  is the radical of a vinyl ester;  $m_2$  is the radical of a vinyl ether;

$M_2$  - as above;  $K_2$  - the rate constant of the addition of  $M_2$  to  $m_1$ ;

$K_4$  - the same constant for the case  $M_1$  and  $m_2$ . The author furthermore assumes that the concentration of radicals in reactions (2) and (3) does not change so that they may be regarded as reactions of the first order. In this case, the rate of disappearance of monomers  $M_1$  and  $M_2$

will be  $-\frac{dM_1}{dt} = K_4 M_1$  (4) and  $-\frac{dM_2}{dt} = K_2 M_2$  (5). If (4) is divided by

(5),  $\frac{dM_1}{dM_2} = \frac{K_4 M_1}{K_2 M_2}$  (6) is obtained. For a given instant, (6) may be

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Study of the chemical conversion ...

written down as follows:  $\frac{m_1}{m_2} = \frac{K_4 M_1}{K_2 M_2}$  (7), where  $m_1$  denotes the number of links of vinyl ester in the copolymer in mole%, and  $m_2$  the same number of vinyl ether links. If  $\frac{K_4}{K_2} = r_3$ , (7) is converted to  $r_3 \frac{M_1}{M_2} = \frac{m_1}{m_2}$  (8).

Since, in the present case,  $m_1 = m_2 = 50$  mole%, (8) becomes

$r_3 \frac{M_1}{M_2} = 1$ , consequently  $r_3 = \frac{M_2}{M_1}$ . If, e.g., the values for (I) and for vinyl-ethyl ether are introduced,  $r_3 \frac{90.9}{9.1} \sim 10$  is obtained;

consequently, (I) adds 10 times more rapidly to a vinyl ether radical than a vinyl ether radical to a vinyl ester radical. The author also finds that neither differential nor integral equations for the composition of copolymers are suited for determining the relative activity of vinyl ether radicals in the copolymerization with methyl esters of acrylic and methacrylic acid. There are 1 figure, 4 tables,

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89912

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B115/B207

Study of the chemical conversion ...

and 10 references: 7 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo  
Akademii nauk SSSR (Institute of Organic Chemistry  
imeni N. D. Zelinskiy of the Academy of Sciences USSR)

SUBMITTED: December 4, 1959

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B115/B207

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Таблица 2

Влияние инициаторов и температуры на выходы и состав сополимеров  
винилбутилового эфира (II) и метилметакрилата (I)

Молярный со- став исходных мономеров, %		Выход, %	Молярный со- став звеньев в сополимере, %		Количество мономеров, не вошедших в сопо- лимер, %		Примечание
I	II		I	II	I	II	
25	75	32,3	74,0	26,0	4,5	88,9	Инициатор— $Bz_2O_2$ , 7т. полимеризации $60 \pm 1^\circ$
25	75	30,5	63,75	36,25	22,3	85,0	Инициатор—динитрил азонизомасляной кислоты, 7т. полимеризации $60 \pm 1^\circ$
25	75	20,0	78,33	21,67	36,0	94,2	Инициатор—динитрил азонизомасляной кислоты, 7т. полимеризации $90 \pm 1^\circ$

Legend to Table 2: 1) Molar ratio of monomers; 2) yield, 3) molar content of links in the copolymer, 4) amount of monomers not having entered the copolymer, 5) note, 6) initiator  $Bz_2O_2$ , 7) polymerization temperature  $60 \pm 1^\circ C$ , 8) initiator azoisobutyric acid dinitrile

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Таблица 4

Значение  $K$  для некоторых сополимеров простых и сложных виниловых эфиров

I	II	1. $K$ при молярных отношениях				2. среднее значение
		I	75%	50%	25%	
		II	25%	50%	75%	
$\text{CH}_2=\text{C}(\text{CH}_3)\text{COOCH}_3$	$\text{CH}_2=\text{CHOC}_2\text{H}_5$	0,26	0,29	0,29	0,29	0,28
$\text{CH}_2=\text{C}(\text{CH}_3)\text{COOCH}_3$	$\text{CH}_2=\text{CHOC}_6\text{H}_{17}$	—	0,31	0,36	0,36	0,33
$\text{CH}_2=\text{C}(\text{CH}_3)\text{COOCH}_3$	$\text{CH}_2=\text{CHOCH}(\text{CH}_3)_2$	0,23	0,29	0,31	0,31	0,26
$\text{CH}_2=\text{C}(\text{CH}_3)\text{COOCH}_3$	$\text{CH}_2=\text{CHOC}_6\text{H}_5$	0,46	0,4	0,46	0,46	0,44
$\text{CH}_2=\text{CHCOOCH}_3$	$\text{CH}_2=\text{CHOC}_2\text{H}_5$	0,51	0,56	0,58	0,58	0,55
$\text{CH}_2=\text{CHCOOCH}_3$	$\text{CH}_2=\text{CHOC}_6\text{H}_5$	0,6	0,65	0,53	0,53	0,6
$\text{CH}_2=\text{CHCOOCH}_3$	$\text{CH}_2=\text{CHOC}_4\text{H}_9$	0,59	0,55	0,56	0,56	0,57

Legend to Table 4: 1). At molar ratios, 2) average value

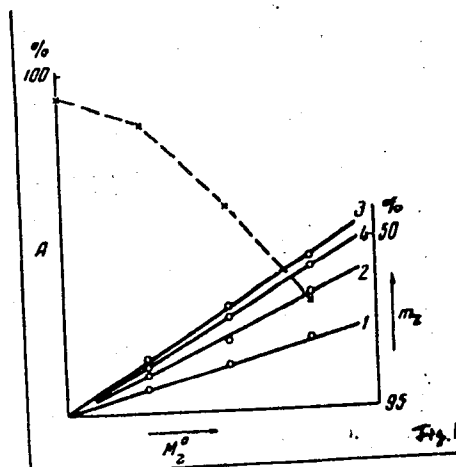
Card 8/9

89912

S/062/61/000/002/009/012  
B115/B207

Study of the chemical conversion ...

Legend to Fig. 1: Dependence between the concentration of vinyl ethers and their number of links in copolymers.  
1) Copolymer of vinyl-ethyl ether with (I); 2) copolymer of (I) and vinyl-phenyl ether; 3) copolymer of methyl acrylate with vinyl-ethyl ether; 4) copolymer of methyl acrylate with vinyl-phenyl ether



Card 9/9

20941

15.8116

2209, 1372

S/062/61/000/003/008/013  
B117/B208

AUTHORS: Shostakovskiy, M. F., Khomutov, A. M., Baykova, R. I., and Kayutenko, L. A.

TITLE: Studies in the field of chemical conversions of unsaturated and high-polymer compounds. Report 17. Synthesis of polymers and copolymers of bis-(methyl-2-buten-1-yne-3)alkylsilanes

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, no. 3, 1961, 488-491

TEXT: The authors report on the study of polymerization and copolymerization of: bis-(methyl-2-buten-1-yne-3)diethyl silane, bis-(methyl-2-buten-1-yne-3)dimethyl silane, and bis-(methyl-2-buten-1-yne-3)methyl-propyl silane. Freshly distilled monomers were used. Copolymerization was carried out continuously for 100 hr at  $60^{\circ} \pm 1^{\circ}\text{C}$ . Azoisobutyric acid dinitrile was used as an initiator in a quantity of 0.2 % of the total weight of the monomer. Control experiments for investigating the polymerization of initial monomers were carried out under the same conditions.

Card 1/3

Studies in the field of chemical...

20941  
S/062/61/000/003/008/013  
B117/B208

Bis-(methyl-2-buten-1-yne-2)diethyl silane readily polymerizes at room temperature on the air and in the presence of initiators. The polymers are transparent, hard, and three-dimensional substances. They remain unchanged when heated to 400°C. During copolymerization with methyl methacrylate, polymers of different composition are formed, according to the concentration of the initial monomers in the reaction medium. The copolymer yields were found to decrease with increasing content of bis-(methyl-2-buten-1-yne-3)diethyl silane in the reaction medium from 10 to 25 mole%. They change little later on. The number of silane links in the copolymer increases as its concentration in the reaction medium rises. The resultant copolymers are hard, light yellow substances with high dielectric properties:  $\rho_v = 10^{17}-10^{18}$  ohm·cm. Bis-(methyl-2-buten-1-yne-3)diethyl silane was used for "cross-linking" in the polymerization of methacrylic acid and styrene. For comparison, the copolymerization of methyl methacrylate with bis-(methyl-2-buten-1-yne-3)dimethyl silane and bis-(methyl-2-buten-1-yne-3)methyl-propyl silane was studied at equal molar ratios. It was found that those copolymers have the highest yields and the highest content of silane links, which contain links of bis-(methyl-2-buten-1-yne-3)diethyl silane. There are 1 figure, 5 tables, and 6

Card 2/3

20941

S/062/61/000/003/008/013  
B117/B208

Studies in the field of chemical...

references: 3 Soviet-bloc and 3 non-Soviet-bloc.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii  
nauk SSSR (Institute of Organic Chemistry imeni  
N. D. Zelinskiy, Academy of Sciences USSR)

SUBMITTED: November 19, 1959

X

Card 3/3

SHOSTAKOVSKIY, M.F.; KHOMUTOV, A.M.; ALIMOV, A.P.

Chemical conversions of unsaturated and high molecular weight compounds.  
Report No. 18: Polymerization and copolymerization of divinyl  
tartrate and methyl methacrylate. Izv.AN SSSR Otd.khim.nauk no.4:  
706-709 Ap '61. (MIRA 14:4)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.  
(Tartaric acid) (Methacrylic acid)

25044

S/062/61/000/006/006/010  
B118/B220

15.8076

AUTHOR: Khomutov, A. M.

TITLE: Studies in the field of chemical conversions of unsaturated and high-molecular compounds. Report 19. Alternation occurring on copolymerization of vinyl ethers

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 6, 1961, 1116 - 1119

TEXT: The purpose of the present study was to eliminate the alternation effect occurring on copolymerization by increasing the concentration of the active acrylate and to find out whether only the polymer chain of the active acrylate would grow. Therefore, the copolymerization was effected with excess methyl methacrylate (75 mole %) and 25 mole % vinyl butyl ether. After 8 hr the reaction was interrupted. The fractionation of the separated polymers resulted not only in the copolymer of methyl methacrylate and vinyl butyl ether, but also in the polymer of methyl methacrylate, thus confirming the possibility of suppressing the alternation effect at a certain stage of copolymerization. In case of a reaction time of 40 hr, Card 1/3

Studies in the field of...

25044  
S/062/61/000/006/006/010  
B118/B220

the polymer could not be separated. Thus, the influence of the concentration of methyl methacrylate in the reaction medium at the beginning of the process became evident. If the concentration of the vinyl butyl ether increases, the alternation effect becomes noticeable; the monomer of vinyl butyl ether adds to the radical of the polymer chain of methyl methacrylate. In order to determine the consumption of monomers, the rate of formation of the polymer chain as dependent on time and on the concentration of the initial monomers was studied. For this purpose, 75 mole % methyl methacrylate and 25 mole % vinyl butyl ether and, vice versa, 25 mole % methyl methacrylate and 75 mole % vinyl butyl ether were copolymerized. Specimens were taken every hour and examined as to yield and composition. The influence of the reaction time on the composition of the members of the vinyl ethers in the copolymer is shown in Fig. 2. If the reaction takes place with excess vinyl ether (showing no strong activity), a tendency of the monomers to alternation is evident as soon as the polymer chain begins to grow. Thus, the formation of the polymer of methyl methacrylate in the reaction medium with excess monomer was confirmed experimentally, and the influence exerted by the concentration of the initial monomers upon the alternation effect on copolymerization was shown. There are 2 figures, Card 2/3

15.8113

28276  
S/062/61/000/010/013/018  
B106/B101

AUTHORS: Shostakovskiy, M. F., Khomutov, A. M., and Khomutova, N. M.

TITLE: Reaction of polyvinyl alcohol with polymethacrylic acid

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 10, 1961, 1890 - 1891

TEXT: The activity of the hydroxyl groups of polyvinyl alcohol in the reaction with polymers containing functional groups with mobile hydrogen has hitherto not been studied. In this connection, the authors investigated the reaction between aqueous solutions of polyvinyl alcohol and polymethacrylic acid at room temperature without using a catalyst. The polyvinyl alcohol contained 1.5% of acetate groups, and had a specific weight of 1.259. Data of methacrylic acid: boiling point 160°C,


$n_D^{20}$  1.4313,  $d_4^{20}$  1.0153, acid number 650 mg of KOH. Methacrylic acid was polymerized in the presence of 0.2% of benzoyl peroxide, the polymer reprecipitated from its methanolic solution with benzene several times, until no double bond could be proved any longer. Then, polymethacrylic  
Card 1/4

28276

S/062/61/000/010/013/018  
B106/B101

Reaction of polyvinyl alcohol...

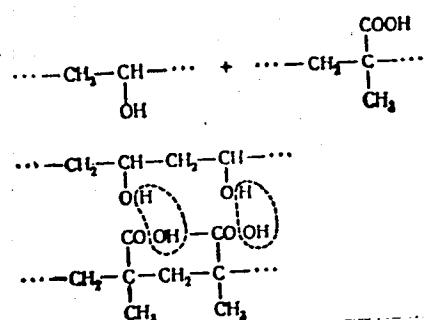
acid was dried up to a constant weight and finally analyzed. It contained 99.5% of carboxyl groups. In order to synthesize the polyester, 10% aqueous solutions of polyvinyl alcohol and polymethacrylic acid were mixed at room temperature. The polyester precipitate deposited after some minutes was washed with water up to a neutral reaction and then dried up to a constant weight. The content of unused polymethacrylic acid in the filtrate was determined titrimetrically. To analyze the polyester, it was saponified with lye, and the content of carboxyl groups was determined titrimetrically. Then, the amount of polymethacrylic acid entering the composition of the polyester was calculated. The results are given in a table. The reaction in question was conducted at equimolecular ratios of the initial substances (referred to one link) or with an excess of one of the two reactants. In all cases, esterification was almost quantitative. The reaction can be observed well, since both polyvinyl alcohol and polymethacrylic acid are readily soluble in water, whereas the reaction product is not water-soluble and precipitates from the aqueous solution. The reaction follows the pattern:



Card 2/4

23276 3/062/61/000/010/013/018  
B106/B101

# Reaction of polyvinyl alcohol...



The resulting new polyesters belong to the so-called cross-linked high-molecular compounds. They are insoluble in water and organic solvents, and carbonize on heating without melting. In order to clarify the structure of the polyesters, they were subjected to alkaline hydrolysis. In aqueous sodium hydroxide, hydrolysis is complete and yields polyvinyl alcohol and the sodium salt of polymethacrylic acid. An analogous ex-

periment with an aqueous solution of polyvinyl alcohol was carried out in order to study the course of reaction between polyvinyl alcohol and monomeric methacrylic acid. In this case, the reaction is considerably slower. It was found that the esterification of polymethacrylic acid with polyvinyl alcohol in aqueous solution is almost quantitative. [Abstracter's note: Essentially complete translation.] There are 1 table and 3 Soviet references.

Card 3/4

Reaction of polyvinyl alcohol...

20210 S/062/61/000/010/013/018  
B106/B101

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences USSR)

SUBMITTED: April 3, 1961

① Исходные вещества	② Моляр- ное соотно- шение	③ Выход, % от те- рет.	Содержание звеньев полиметакриловой кислоты ④		Количество полимет- акриловой кислоты, не вошед- шей в реак- цию, % ⑤
			теорет., % а	практ., % б	
Поливиниловый спирт ⑥	1	99,0	61,6	59,0	1,07
Полиметакриловая кислота ⑦	1				
Поливиниловый спирт ⑥	0,5	91,6	61,6	58,6	41,6
Полиметакриловая кислота ⑦	1				
Поливиниловый спирт ⑥	1	94,5	61,6	59,4	0,97
Полиметакриловая кислота ⑦	0,5				

Legend to the Table: (1) initial substances; (2) molar ratio; (3) yield, % of theoretical value; (4) content of polymethacrylic acid links; (a) theoretical value, %; (b) practical value, %; (5) amount of polymethacrylic acid which did not react, %; (6) polyvinyl alcohol; (7) polymethacrylic acid.

Card 4/4

15-8113

29522  
S/062/61/000/011/009/012  
B103/B147

AUTHORS: Shostakovskiy, M. F., Khomutov, A. M., Chekulayeva, I. A., and Khomutova, N. M.

TITLE: Synthesis and polymerization of diallyl tartrate

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 11, 1961, 2075 - 2077

TEXT: Synthesis and polymerization of diallyl tartrate (DAT) were studied. This was done to clarify the effect of its structure on the course of polymerization as well as the polymer properties, in the case where DAT contains further functional groups (OH). The synthesis was effected by esterification of tartaric acid with allyl alcohol in the presence of hydroquinone and sulfuric acid at 70 °C in benzene solution. In order to establish the polymerization conditions of DAT, different quantities of the following initiators were used: (a) benzoyl peroxide ( $Bz_2O_2$ ), and (b) azoisobutyric acid dinitrile, the temperature (60, 95, and 125 °C) as well as the reaction time (5 - 21 hr) being varied. It has been found that

Card 1/4

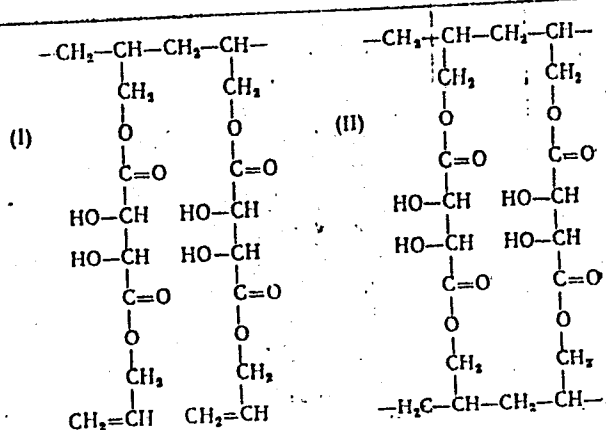
29522

S/062/61/000/011/009/012

B103/B147

Synthesis and polymerization...

either linear (I) or tridimensional (II) polymers are formed in different quantitative proportions depending on the reaction conditions:



Card 2/4

29522  
S/G62/61/000/011/009/012  
P:03/0147

# Synthesis and polymerization

Table 1 shows the effect of  $Bz_2O_2$  as initiator on the polymerization of DAT.

The polymers have a predominantly cross-linked structure in the presence of 4.5 - 6% of  $Bz_2O_2$ . Increase of temperature and heating time have the following effects: with 6% of  $Bz_2O_2$ , DAT is practically not polymerized

within 5 hr at 60°C, whereas a solid and insoluble polymer is formed at 95°C (yield 57%). Such a polymer forms at 60°C only after heating for 21 hr. Polymerization with 6% of  $Bz_2O_2$  at 125°C for 18 hr gave the best

results: 98% of a solid transparent polymer which cannot be charged by static electricity. Its heat resistance is 294°C (b) is inferior to  $Bz_2O_2$  as initiator. At 95°C, its use yields only 5% of viscous polymer

within 18 hr. DAT is less active in polymerization than fumaric and maleic esters. This might be due to the OH groups contained in DAT. There are 2 tables and 6 references: 4 Soviet and 2 non-Soviet. The references to English-language publications read as follows: Tsunao Araki, Hiroko Jida, Repts Govt Chem Ind Research Inst Tokyo, 47, 95 (1952); Chem. Abstrs., 47, 10889 (1953) X

Card 3/04

Synthesis and polymerization...

29522  
S/062/61/000/011/009/012  
B103/B147

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences USSR)

SUBMITTED: June 12, 1961

Table 1 Polymerization of diallyl tartrate with different quantities of  $Bz_2O_2$  at 95°C within 5 hr

Legend: (1)  $Bz_2O_2$  content, %; (2) fractionated quantity of polymer, g; (3) polymer yield, %; (4) total; (5) tridimensional; (6) linear; (7) quantity of nonpolymerized monomer, %; (8) content of tartaric acid in the tridimensional polymer, %; (9) real; (10) theoretical

Card 4/04

30266

S/062/61/000/012/007/012  
B117/B147

15.8070

2209

AUTHORS: Shostakovskiy, M. F., Khomutov, A. M., and Sidel'kovskaya, F. P.

TITLE: Copolymerization of vinyl pyrrolidone with methyl methacrylate and acrylonitrile

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 12, 1961, 2222 - 2225

TEXT: The copolymerization of N-vinyl pyrrolidone with methyl methacrylate and acrylonitrile in various molar ratios up to radical conversion was examined. Polymerization occurred within 100 hr in the presence of dinitrile of azoisobutyric acid (0.2%) at  $60 \pm 1^\circ\text{C}$ . During copolymerization of the above monomers, copolymers were formed in which the number of vinyl pyrrolidone groups increased with an increase in concentration of the vinyl pyrrolidone in the reaction medium while the yields slightly decreased. The relative activity of radicals of the examined monomers was studied on the copolymerization with lesser degree of conversion. For the evaluation of this activity, the copolymerization constants  $r_1$  and  $r_2$

Card 1/3

30166

S/062/61/000/012/007/012  
B117/B147

Copolymerization of vinyl pyrrolidone...

were determined with an accuracy of  $\pm 0.02$  using the integral equation of Mayo and Lewis (Ref. 3, see below). A comparison of the relative activities showed that methyl methacrylate was more active with respect to vinyl pyrrolidone radicals. To clarify the effect of vinyl pyrrolidone groups on the solubility of copolymers with acrylonitrile groups, the solubility of the copolymers in several organic solvents was examined at room temperature and during heating. It was found that copolymers of vinyl pyrrolidone and methyl methacrylate were soluble in acetone, ethanol, butanol, benzene, dioxane, chloroform, ethyl cellosolve, ethyl acetate, and butyl acetate. Copolymers of vinyl pyrrolidone and acrylonitrile were not soluble in the above-mentioned compounds. They dissolve in pyrrolidone, vinyl pyrrolidone, butyl pyrrolidone, butyrolactone,  $\beta$ -(N-pyrrolidonyl)-ethyl formate,  $\beta$ -(N-pyrrolidonyl)-ethyl acetate. In the above-mentioned organic compounds, the homopolymer of acrylonitrile is insoluble. There are 2 figures, 5 tables, and 5 references: 2 Soviet and 3 non-Soviet. The three references to English-language publications read as follows: Ref. 1: U. S. Pat. 2667473 (1954); U. S. Pat. 2676949 (1954); U. S. Pat. 2497705 (1950); U. S. Pat. 2713573 (1955); U. S. Pat. 2739588 (1956); R. M. Rike, D. L. Baily, J. Polymer Sci. 22, no. 100, 55

Card 2/3

35594

S/062/62/000/003/012/014  
B110/B101

11/12/65

AUTHORS:

Shostakovskiy, M. F., Gladyshevskaya, V. A., and  
Khomutov, A. M.

TITLE:

Decomposition of azoisobutyric dinitrile in vinylbutyl ether

PERIODICAL:

Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh  
nauk, no. 3, 1962, 499-505

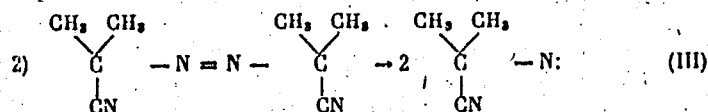
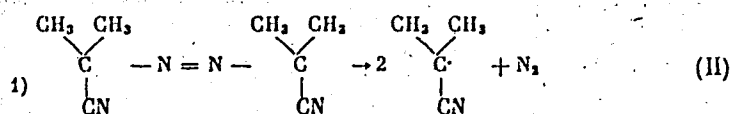
TEXT: The products formed in the reaction of azoisobutyric dinitrile (A) with vinylbutyl ether (B) by recombination, disproportionation, breaking off of the H atom and chain growth were studied. On the basis of the molecular weights, the following compounds formed by recombination are presumed: R-M-M-R, R-M-M-M-R (molecular weight 430), where M = monomer link. By radical combination during the decomposition of azoisobutyric dinitrile (R-R), tetramethyl succinic dinitrile (melting point 167°C) is formed:  $2(\text{CH}_3)_2\text{C}^{\cdot} \rightarrow (\text{CH}_3)_2\text{C}-\text{C}(\text{CH}_3)_2$  (I). The decomposition of A is

supposed to occur according to

Card 1/4

Decomposition of azoisobutyric...

S/062/62/000/003/012/014  
B110/B101

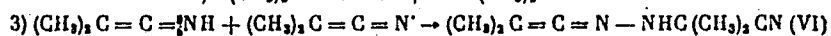
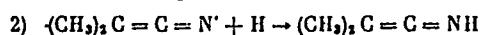
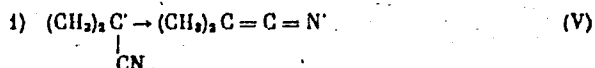


The investigation of the infrared spectra of a substance with the melting point of 72-73°C proved it to be isobutylene azo isobutyronitrile  $(\text{CH}_3)_2\text{C}=\text{CH}-\text{N}=\text{N}-\text{C}(\text{CH}_3)_2\text{CN}$  (IV). By recombination of radicals (II) and (III) arise under participation of free hydrogen according to

Card 2/4

Decomposition of azoisobutyric...

S/062/62/000/003/012/014  
B110/B101

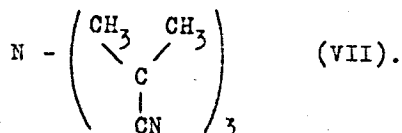


VI isomerizes to IV. At a ratio of 90 % B : 10 % A, it was found after heating for 1 hr at 80°C that the greater part of A did not decompose and only small amounts of IV were formed. Heating for 2 hr increased decomposition of A, polymer yield and formation of IV. Longer heating produced complete decomposition of A, increasing polymer yield and constant amount of IV. At a < 6-hr heating, no I was formed. The formation of I, taking place on 6 hr heating, indicates the decomposition of IV → I, which was proved experimentally. Heating for 6 hr at 80°C of 50 mole% A and 50 mole% B produced I, small amounts of IV and low-molecular polymer. 33.3 mole% A and 66.6 mole% B produced large amounts of IV and compounds melting at 85°C, identified by elementary analysis and infrared spectroscopy as triisobutyronitrile amines: ✓

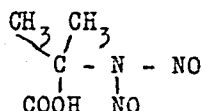
Card 3/4

Decomposition of azoisobutyric...

S/062/62/000/003/012/014  
B110/B101



When heated for 6 hr at 80°C, VII decomposes under formation of I. For 1 mole% A and 99 mole% B, only low-molecular polymer was formed. During the effect of thionyl chloride, benzosulfochloride, nitrous acid and hydrochloric acid on IV, it decomposes. HCl action produced A. This confirms the reaction III. HNO<sub>2</sub>, with IV, produced a nitro compound melting at 120°C:



There are 2 tables.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences USSR)

SUBMITTED: September 15, 1961

Card 4/4

SHOSTAKOVSKIY, M.F.; GLADYSHEVSKAYA, V.A.; KHOMUTOV, A.M.

Decomposition of dinitrile of azoisobutyric acid in vinyl-  
butyl ether. Izv.AN SSSR.Otd.khim.nauk no.3:499-505 Mr  
'62. (MIRA 15:3)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.  
(Butyronitrile) (Ethers)

L 17450-63

EMP(j)/EPF(c)/EWT(m)/BDS ASD PC-4/Pr-4 RM/WW

ACCESSION NR: AP3004697

S/0190/63/005/008/1121/1126

AUTHOR: Khomutov, A. M.

TITLE: Reactivity of simple vinyl ethers during copolymerization

64  
63

SOURCE: Vy\*sokomolekulyarny\*ye soyedineniya, v. 5, no. 8, 1963, 1121-1126

TOPIC TAGS: reactivity, vinyl ether, copolymerization, vinylalkyl ether, polymer, monomer, dinitroazoisobutyric acid, peroxide, initiator

ABSTRACT: The author has found a linear dependence of the ether unit content in copolymers on the initial ether concentration in the monomer mixture. In no case did the units of vinylalkyl units in a copolymer exceed 35 mol %. It was not possible in the experiments to obtain copolymers with these units exceeding 50 mol %. The author found that vinyl ethers in copolymerization with vinyl acetate gave better results in the presence of dinitroazoisobutyric acid than in the presence of a peroxide initiator. He therefore carried out the copolymerization with an excess of vinylalkyl ether (with a molar ratio of vinylalkyl ether to vinyl acetate of 3:1). Results show that the assumption is valid that the activity of ethers is greater the lower the activity of the second component. Orig. art. has: 3 tables and 4 formulas.

ASSN: Institute of Organic Chemistry, Academy of Sciences,

Card 1/2 /

SHOSTAKOVSKIY, M.F.; KHOMUTOV, A.M.; ALIMOV, A.P.

Copolymerization of vinyl chloroacetate with vinyl ethers and styrene.  
Izv. AN SSSR Ser.khim. no.10:1839-1843 0 '63.

Polymerization of vinyl alkyl ethers in the presence of organomagnesium  
compounds. 1843-1846 (MIRA 17:3)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.

L 01236-66 ENT(1)/ENT(m)/EFF(c)/EIP(j)/T/EIP(t)/EWP(b)/EWA(h) IJP(c)/RPL  
JD/MS/GS/AT RM

ACCESSION NR: AT5020453

UR/0000/64/000/000/0087/0104

AUTHOR: Krotova, N. A.; Sokolina, G. A.; Khrustalev, Yu. A.; Agranenko, N. P.  
Lomova, N. F.; Khomutov, A. M.

TITLE: Change in the surface state of germanium during the formation of an adhesion bond with a polymer

SOURCE: Mezhdunarodnaya nauchno-tekhnicheskaya konferentsiya po fizike poluprovodnikov (poverkhnostnyye i kontaktnyye yavleniya). Tomsk, 1962. Poverkhnostnyye i kontaktnyye yavleniya v poluprovodnikakh (Surface and contact phenomena in semiconductors). Tomsk, Izd-vo Tomskogo univ., 1964, 87-104

TOPIC TAGS: polymer, semiconductor research, protective coating, surface property, crystal surface, lacquer/ LVS-31 lacquer, MBK-1 lacquer

ABSTRACT: The authors study the effect which the functional groups in a polymer have on the surface state of germanium in connection with the use of organic polymer materials for protecting semiconductor devices from atmospheric action. The field effect method was used for experimentally studying the surface conductivity with the application of a constant field. The slow changes in conductivity with time were

Card 1/13

L 01286-66

ACCESSION NR: AT5020453

6  
recorded. The material studied was *n*-germanium with a resistivity of 40  $\Omega \cdot \text{cm}$  and a diffusion length of 2.5 mm. The specimen was a plate with dimensions of 20 x 5 x 5 mm cut from a single crystal of germanium parallel to plane (111). Ohmic contacts were fused to the ends of the specimen. The sample was etched in a peroxide-alkali mixture. The surface conductivity is shown as a function of time in fig. 1 of the Enclosure. Typical curves for conductivity in the field effect for high resistance *n*-germanium are given in fig. 2 of the Enclosure. These curves may be given as  $\Delta\sigma = f(U)$  or as  $\Delta\sigma = \phi(Q)$ , if  $Q$  is the induced charge of a condenser determined from the capacity. Here  $\Delta\sigma$  indicates the change in surface conductivity, and  $U$  gives the potential. Polymers of the vinyl series were studied with regard to the effect of the nature of functional groups and their concentration in the chain of a copolymer on the shape of  $\Delta\sigma = \phi(Q)$  curves plotted from measurements in vacuum. The results are shown in Fig. 3 of the Enclosure. Curves are also given for copolymers of methyl-methacrylate with methacrylic acid, for a gelatin-germanium interface (where the gelatin has functional radicals  $\text{NH}_2$ , OH and COOH) and for polyhydroxyethylene--a polymer which has no functional polar radicals and which has oxygen bound by single bonds in the chains. A comparison of the curves indicates that functional radicals change the position of  $\Delta\sigma_{\text{min}}$  noticeably, while polymers without strongly polar groups have little effect on this parameter. Compositions of polymers were studied

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along with individual polymers. It was found that two industrial lacquers, MBK-1 and LVS-31, offer more protection against moisture than do the individual polymers. However, the lacquer films are much thicker than the individual polymer films. It is shown that LVS-31 has a few advantages over MBK-1 as a protective film for semiconductor devices. Orig. art. has: 13 figures, 6 tables.

ASSOCIATION: none

SUBMITTED: 06Oct64

NO REF SOV: 006

ENCL: 03

OTHER: 005

SUB CODE: SS, MT

Card 3/83

L 31365-65 EWT(m)/EPF(c)/EWP(j)/T/EWP(t)/EWP(b) Pc-4/Pr-4 IJP(c) JD/RM

ACCESSION NR: AP4047398

S/0062/64/000/010/1848/1853 30

AUTHOR: Shostakovskiy, M. F.; Khomutov, A. M.; Alimov, A. P. 27  
B

TITLE: Stereospecific polymerization of vinyl-n. butyl ether at room temperature in the presence of sulfuric acid-aluminum sulfate complex

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 10, 1964, 1848-1853

TOPIC TAGS: vinyl butyl ether, stereospecific polymerization, aluminum sulfate complex, polymerization catalyst

ABSTRACT: Vinyl-n. butyl ether stereospecific polymers having a molecular weight of  $9.5 \times 10^5$  and containing an MEK-insoluble fraction were obtained in 80-95% yields by homogeneous polymerization at room temperature in the presence of the catalytic sulfuric acid-aluminum sulfate complex. The insoluble fraction had a crystalline structure. The effects of polymerization time and temperature, and monomer and catalyst concentrations on the polymerization process were investigated. The highest molecular weight polymer was obtained at 30C,

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ACCESSION NR: AP4047398 3

but varying temperature from 0-40C had little effect on the yield of the insoluble fraction. The effect of changing monomer concentration from 0-10 wt. % was insignificant, but an increase to 20 wt. % reduced the yield, molecular weight and insolubles. Varying monomer:catalyst ratio from 8000:1 to 128000:1 resulted in little change, but reducing the ratio to 2000:1 lowered product yield and molecular weight. Polymerization under a nitrogen atmosphere or in the presence of antioxidants had little effect on the process. The sulfuric acid-aluminum sulfate complex was not nearly as sensitive as the Ziegler catalyst to impurities in the monomer or solvent. This lesser need for careful purification in the polymerization system makes this catalyst for the stereospecific polymerization of vinyl-n-butyl ether commercially interesting. "The polymer x-rays were taken by L. G. Vorontsov and the IR spectra by B. V. Lopatin, which the authors acknowledge." Orig. art. has: 2 figures and 3 tables

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry, Academy of Sciences SSSR)

SUBMITTED: 21Jan63

ENCL: 00

SUB CODE: MT, GC

NR REF SOV: 002

OTHER: 011

Card 2/2

L 01044-67 EWT(m)/T IJP(c) WW/RM

ACC NR: AP6019542

(A)

SOURCE CODE: UR/0190/66/008/006/1068/1072

AUTHOR: Khomutov, A. M.; Alimov, A. P.38  
37ORG: Institute of Organic Chemistry im. N. D. Zelinskiy, AN SSSR (Institut organicheskoy khimii AN SSSR)TITLE: Copolymerization of vinylalkylestersSOURCE: Vysokomolekulyarnyye soyedineniya, v. 8, no. 6, 1966, 1068-1072TOPIC TAGS: solid mechanical property, copolymerization, polyester plastic, vinyl copolymer, *ESTER, COPOLYMER, VINYL COMPOUND*

ABSTRACT: Copolymerization of vinylethyl- and vinyl-n-butyl esters, vinylethyl- and vinyl-iso-butyl esters, vinyl-n-butyl- and vinyl-iso-butyl esters, vinyl-n-butyl- and vinyl-iso-propyl esters, and vinylethyl- and vinyl-iso-propyl esters was studied at 20°C using a sulfuric acid-ammonium sulfate complex as catalyst and heptane as solvent. The object of the work was to synthesize copolymers with a variety of physical properties. The molar ratio between the starting monomers varied from 1:3 to 3:1. The catalyst concentration was equal to 0.00004 mols per liter. The copolymer yields were greater than 91%, their molecular weight was 220,000-1360,000, and their glass points varied from -18° to -53°C. For vinyl-n-butyl ester, vinylethyl ester, and vinyl-iso-propyl ester, the relative reactivities during their copolymerization were determined

UDC: 66.095.26+678.13+678.744

Card 1/2

L 01044-67

ACC NR: AP6019542

and tabulated. It was found that the structure of the alkyl group exerts a profound effect on the activity of an ester during copolymerization. The authors thank L. S. Yasenkova for determination of the molecular weights and the thermomechanical properties of the copolymers. Orig. art. has: 1 figure, 4 tables.

SUB CODE: 07/

SUBM DATE: 02Jun65/

ORIG REF: 005/

OTH REF: 005

2WM

Card 2/2

DUNAKOVSKIY, N.D.; KHOMUTOV, A.S.; KOGAN, N.G.

For wider use of asbestos ballast. Put' i put.khoz. 5 no.4:7-9  
Ap '61. (MIRA 14:7)

1. Zamestitel' nachal'nika Sverdlovskoy dorogi (for Dunakovskiy).
2. Glavnyy inzh. sluzhby puti Sverdlovskoy dorogi (for Khomutov).
3. Nachal'nik tekhnicheskogo otdela sluzhby puti Sverdlovskoy dorogi, predsedatel' Obshchestvennogo redaktsionnogo soveta Sverdlovskoy dorogi (for Kogan).

(Ballast (Railroads)) (Asbestos)

USSR / Human and Animal Physiology. Nervous System, Higher Nervous Activity, Behavior. T

Abs Jour : Ref Zhur - Biol., No 15, 1958, No. 70549

Author : Khomutov, A. V.

\* Inst : ~~Not given~~

Title : A Method of Studying Speech Conditioned Reflexes

Orig Pub : Zh. Vyssh. Mervn. Deyat-sti, 1957, Vol 7, No 5, 775-779

Abstract : The experimental subject was exposed to a picture on a screen. In one half of the picture (exposed), a geometric figure was represented, and in the other (concealed) was a drawing of an object. The preliminary instruction required the subject to recall a combination of various figures and drawings, upon presentation of the former to designate the latter, and by drawing aside the curtain which concealed the part of the picture, to persuade himself of the correctness of his response. In the presence

Card 1/2 \* 1. Neyrofiziologicheskaya laboratoriya nevrologicheskoy kliniki  
Ukrainskogo nauchno-issledovatel'skogo instituta kurortologii.

1. SOLOV'YEV, I. I., PROF., ZEYLIDSON, E. D., ENG., KRIKUNCHIK, A. B., ENG.,  
KHOMUTOV, B. A., ENG., MOSKALEV, A. G., ENG., POPOV, I. N., ENG., TSAREV,  
M. I., ENG.
2. USSR (600)
4. Electric Circuits
7. Remarks to Ye. L. Sirotinskiy's article "Symbols and rules for drawing schemes  
of relay protection and automaticity." *Eletrichestvo* no. 11, 1952.
9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

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Electric Transformers

Gaseous Shield of transformers. Elk, sta., 23, No. 5, 1952.

Monthly List of Russian Accessions, Library of Congress, October 1952, Unclassified.

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PORTNOY, M.G., inzhener; *K.S.A.* KHOMUTOV, B.A., inzhener.

Testing the self-starting of electric motors for internal use.  
Elek.sta. 25 no.11:36-38 N '54. (MLRA 7:11)  
(Electric motors--Starting devices)

SMERTIN, N.T., inzh.; BAGINSKIY, L.V., kand. tekhn. nauk; KHOMUTOV, B.A., inzh.

Protection of large turbogenerators from reverse sequence currents.  
Elek. sta. 35 no.8:45-49 Ag '64. (MIRA 17:12)

KHOMUTOV, B. I.

"The Development of a Method of Producing Powdered Margarine and an Investigation of Its Commodity Value." Cand Tech Sci, Moscow Inst of National Economy imeni G. V. Plekhanov, 12 Nov 54. (VII, 2 Nov 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (11)

SO: Sum. No. 521, 2 Jun 55

KHOMUTOV, B. I., and KOZIN, N. I.

The article, "Preparation of Powdered Fats (Margarine and Butter)," by Prof N. I. Kozin, Doctor of Technical Sciences, and B. I. Khomutov, Candidate of Technical Sciences, Moscow Institute of the National Economy imeni Plekhanov, concerns the development of a procedure for preparing powdered fats (margarine and butter) which eliminates the effects of melanoidine reaction on the quality of the product during storage. According to the authors, the basic raw materials required for the preparation of powdered fats are fat (lard, butter, etc.), sugar, casein (acid, edible), water, and salts (disodium phosphate, table salt, and sodium citrate). The authors established the optimum conditions for preparing casein sols which are capable of forming stable concentrated emulsions when emulsified with fats, and also established and tested on a pilot-plant scale the spray drying range for the emulsion. (Masloboyno Zhirovaya Promyshlennost', No 5, 1956, pp 21-24)

Sum 1239

LOVACHEV, L.N.; KHOMUTOV, B.I.; KOLESIK, Yu.A.

Determining the degree of oxidation transformations in edible  
fats. Izv.vys.ucheb.zav.; pishch.tekh. no.5:137-142 '59.  
(MIRA 13:4)

1. Moskovskiy institut narodnogo khozyaystva imeni G.V.  
Plekhanova, kafedra tovarovedeniya prodovol'stvennykh tovarov.  
(Oils and fats, Edible)

KHOMUTOV, Boris Isotovich; GRANOVSKAYA, I.E., red.; SINEL'NIKOVA, TS.B.,  
red.; BABICHEVA, V.V., tekhn.red.

[Science of food commodities] Tovarovedenie prodovol'stvennykh  
tovarov. Moskva, Gos.isd-vo torg.lit-ry, 1960. 230 p.  
(MIRA 13:3)

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Use of 2-thiobarbituric acid for the detection of oxidized lipids.  
Vop.med.khim. 6 no.4:431-434 J1-Ag '60. (MIRA 14:3)

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DIKKER, G.L.; DRUZHININA, L.N., kand. tekhn. nauk, dots.; ISKENDEROV, A.A.,  
kand. tekhn. nauk, dots.; KLYUYEVA, T.K., kand. tekhn. nauk, dots.;  
LOGOTKIN, I.S., kand. tekhn. nauk; MEL'MAN, M.Ye., kand. tekhn. nauk,  
dots.; MISNIK, I.A., kand. tekhn. nauk; RUSH, V.A., dots.; RUKOSUYEVA,  
A.N., dots., red.; KAFKA, B.V., prof., retsenzent; FERTMAN, G.I., dots.,  
retsenzent; SOBOLEVA, M.I., dots., retsenzent; BUDNITSKAYA, R.S., kand.  
tekhn. nauk, retsenzent; VOLKOV, Ye.N., kand. tekhn. nauk, retsenzent;  
AREF'YEV, I.I., inzh., retsenzent; KHARITONOV, A.F., retsenzent; GUREVICH-  
GUR'YEV, Ye.S., retsenzent; KUZ'MINSKIY, M.M., retsenzent; INIKHOV, G.S.,  
prof., retsenzent; KHCUMUTOV, B.I., dots., retsenzent; BORODINA, Z.N.,  
dots., retsenzent; BORISOVA, G.A., red.; MEDRISH, D.M., tekhn. red.

[Starch, sugar, honey, confectionery products, condiments, fats, milk,  
and milk products] Khrakmal, sakhar, med, konditerskie, vkusovye to-  
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BALASHOVA, V.K.; VOL'VOVSKAYA, Ye.A., inzh.

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1. Laboratoriya Ministerstya zdravookhraneniya SSSR (for  
Khomutov, Zolotareva). 2. Moskovskiy margarinovyy zavod (for  
Gening, Balashova, Vol'vovskaya).  
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KHOMUTOV, B.I., kand.tekhn.nauk; KULAKOVSKAYA, N.A., kand.biol.nauk

Quantitative determining of butyl hydroxyanisole, propyl and octyl  
gallates in vegetable oils. Masl.-zhir.prom. 28 no.8:19-22 Ag '62.  
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